

DESCRIPTIVE NOTES ON THREE NEW OR RARE HIMALAYAN TAXA OF *INDIGOFERA* L. (FABACEAE — PAPILIONOIDEAE)¹M. SANJAPPA²

(With two text-figures)

(i) Some specimens of *Indigofera* collected by C. B. Clarke from Khasia Hills (Meghalaya) were named by him as *I. sesquipedalis* and noted its resemblance with 'Khasia heteranth' (i.e. *I. heterantha* Wall. ex Brandis of Khasia). However, several other sheets which resemble *I. sesquipedalis* were found to be erroneously identified by him as *I. dosua* Ham. (C. B. Clarke 7296), *I. heterantha* Wall. ex Brandis (C. B. Clarke 18598), *I. leptostachya* DC.? (C. B. Clarke 40103), and *I. pulchella* Roxb. (C. B. Clarke 18614).

D. Prain on examination of all the above specimens at CAL has annotated them as '*I. sesquipedalis* C. B. Clarke Mss.' Indeed, on critical study of all the above sheets and many other specimens from different herbaria, they were found to represent a distinct species which is allied to *I. heterantha* as was suspected earlier by C. B. Clarke. Since, this species had not been published by Clarke or by others, it is described here in detail with illustrations:

***Indigofera sesquipedalis* C. B. Clarke ex Sanjappa, sp. nov.**

I. heterantha Wall. ex Brandis, affinis sed differt habitu parniore (usque ad 1 m), ramisque blabrescentibus, foliis manifeste petiolatis, sacemis pedunculatis, antheris sparsim barbatis, leguminibusque brevioribus, deflexis, patentibus.

Holotypus lectus a C. B. Clarke 38232 and locum Shillong, alt. 5000 ped., die 1.6.1885, et positus in CAL.

***Indigofera sesquipedalis* C. B. Clarke ex Sanjappa, sp. nov. (Fig. 1)**

Allied to *I. heterantha* Wall. ex Brandis but differs from it in being a small shrub (up to 1 m), and having glabrescent branches, distinctly petiolate leaves, peduncled racemes, sparsely bearded anthers and shorter deflexed spreading legumes.

Type: Shillong, 5000' 1 Jun. 1885, C. B. Clarke 38232 (holotype, CAL).

Undershrub c. 60 cm high, copiously branched from the base, branches 15-35 cm long, angular adpressed pubescent when young, terete and glabrous at maturity, root stock thick. Leaves 2.5-3 cm long, pinnate, alternate, petiole 6-10 mm long, canaliculate above, adpressed pubescent; leaflets (5-) 7-11 (17), opposite, 5-7 × 2-3 mm, tiny, oblong or obovate, rounded to obtuse at base, obtuse at apex, mucronate, glabrescent and green above, adpressed pubescent and pale below; stipules 1-1.5 mm long, subulate, adpressed pubescent without; stipels c. 1 mm long, setaceous; petioles c. 1 mm long, pubescent. Racemes 2.5-3 cm long, axillary, many-flowered, compact, peduncles 5 mm long, angular, adpressed pubescent. Flowers rose-purple or deep crimson-purple; bracts 1.2-2 mm long, setaceous adpressed pubescent without; pedicels c. 1 mm long; calyx 2 mm long, campanulate, lobes 1.5 mm long, subulate, adpressed pubescent without, tube 0.5 mm long; standard 3.5-4 × 2.5 mm, ovate, rounded at base, acute at apex, mucronulate, thinly puberulous without; wings 3.5 × 1 mm, oblong-ovate, shortly clawed at base, obtuse at apex, thinly pubescent along

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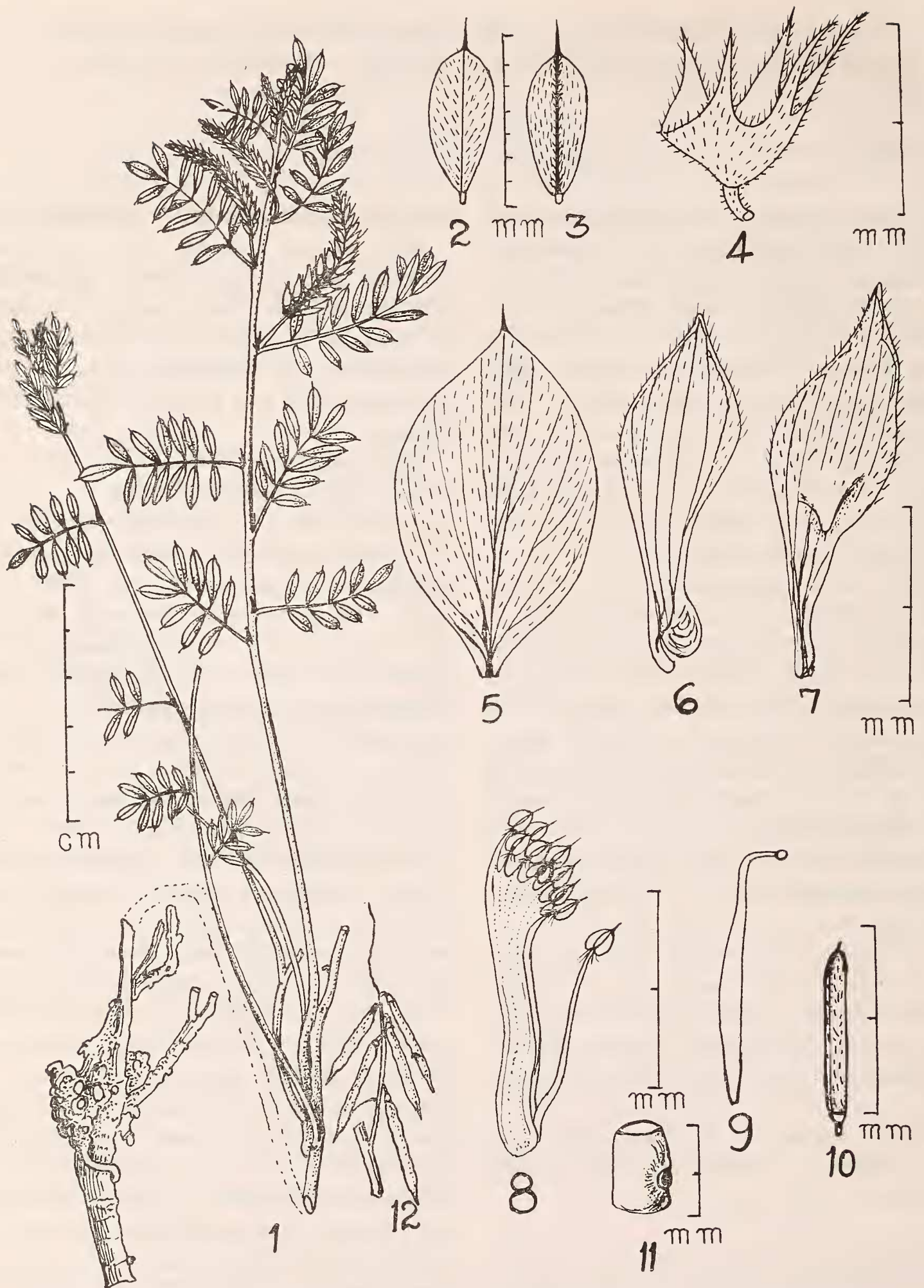


Fig. 1. *Indigofera sesquipedalis* C. B. Clarke ex Sanjappa, sp. nov. 1. A twig of the plant with root stock. 2. Leaflet — adaxial surface. 3. Leaflet — abaxial surface. 4. Calyx. 5. Standard. 6. Wing. 7. Keel. 8. Stamens. 9. Carpel. 10. Mature pod. 11. Seed. 12. Young pods.

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the margins; keels 4×1 mm, spatulate, cuneate at base, acute at apex, spurred, thinly adpressed hairy; stamens diadelphous (9 + 1), 3-3.5 mm long, anthers sparsely bearded at base; ovary 1.5-2 mm long, oblong, 5-8-ovuled, glabrous; style 1-1.5 mm long, glabrous; stigma capitate. Pods 15-20 \times 2-2.5 mm linear, cylindrical, reflexed, sutures thin, valves rounded, shortly apiculate, sometimes faintly torulose, thinly short adpressed pubescent, 5-8-seeded, septate between seeds, endocarp red-spotted; peduncles elongating in fruits. Seeds 2-2.5 \times 1.5 mm, cylindrical, truncate at both ends, smooth, reddish brown.

Flowering: May — August.

Fruiting: August.

Distribution: INDIA: Khasia Hills—Meghalaya, Naga Hills — Nagaland and Aka Hills—Arunachal Pradesh (— Based on Biswas, Ind. For. Rec. 3(1): 17.1941).

Specimens examined: At Cal: INDIA: Meghalaya, Khasia Hills, Shillong, 5000', 1 June 1885, C. B. Clarke 38232 (holotype); Maphlong, 5500', 18 Oct. 1872, C. B. Clarke 18598 B, 18614 (paratypes); Normai, 4500', 25 Aug. 1885, C. B. Clarke 40103 (paratype); Boga Pani, 2000', 1 Jun. 1868, C. B. Clarke 7296; Shillong, 5000', Oct. 1867, C. B. Clarke 5757; Loitlynghat, 5-6000', 6 Dec. 1946, F. Kingdon-Ward 2; Khasia, G. Mann s. n. (Acc. no. 11007); Shillong, 5000', May 1890, Badal Khan s. n.; Khasia, 6000', Hooker f. & Thomson s. n.; Woodlands, New Colony, Shillong, 4 Jun. 1960, R. K. Raivaid 18184; 3-4000', May, Herb. Sulp. Kurz 213, 521; 5000', May 1878, Forest Herb. no. 756; 5000', June 1876, Herb. Sulp. Kurz 262; Cherrah valley, 6000', 1878, Gallataly 217 pro parte (Specimen on right hand side only); Shillong, 5000', E. B. Carter 851; Dumpep to Shillong, 5-6000', 4 Jun. 1911, Burkill & Banerjee 35206; Shillong to Dumpep, 4900'-6300', 29 May 1891, Burkill

& Banerjee 44, 24 May 1911, Burkill & Banerjee 45; on the way to Cherrapunji from Shillong between 14th and 15th mile, 2 Jun. 1958, R. S. Rao 2671; Shillong, 5500', 21 Aug. 1886, C. B. Clarke 44617A (K, Photo BSI Neg. No. 5328B — CAL); Woodlands, Shillong, 23 May 1972, H. Deka 38472; Woodlands, Shillong, Sept. 1960, Collector? 21734,

At ASSAM: Umber falls, 18 May 1930, P. C. Kanjilal 8062; Peak forests, 6000', 12 Jul. 1931, Shriram Sharma 9253; Khasia Hills, 5000', Jun. 1876, G. Mann 262, 5000', May 1878, G. Mann 756, 4-5000', July 1879, G. Mann s. n.; Assam, locality? G. Mann s. n. G. Mann 262, G. Mann s. n. (Acc. nos. 7193, 7194, 7200), Station Nursery, Shillong, June 1949, G. K. Deka 22787; Elephant fall, 22 Jul. 1951, H. Deka 23273; Mulki, Shillong, 5800', 10 Nov. 1930, Shivaram Sharma 8576; Upper Shillong, 30 Jul. 1942, G. K. Deka 21444; Woodland compound, Shillong, 30 May 1973, S. Das 13168; Mirang to Nongkhland, 15 Jun. 1958, G. Panigrahi 16159; Shillong to Cherrapunji, 14th and 15th mile, G. K. Deka 2671; Nongkrem, 3 Jun. 1914, P. C. Kanjilal 592 M; Laitkar, Shillong, 20 May 1963, S. K. Kar 32486.

At NEHU (Shillong): Upper Shillong, 10 Sept. 1978, B. Biswas 48; 26 Sept. 1978, Albert Solo 146; 7 Sept. 1975, A. Handigae 10; Laitkon, 23 Jul. 1977, K. M. Kuruvika 42; S. E. falls, Shillong, 23 Aug. Z. Pachuan 28.

At DD: Khasia Hills, 5-6000', G. Mann 213; Shillong peak, 5000', 10 Aug. 1943, N. L. Bor 17996, 17997.

At LWG: Shillong peak, 17 May 1960, R. V. Sitholey and party s. n. (ACC. no. 43794); Cherrapunji, 5000', 29 April 1962, S. Chopra and party s. n. (ACC. no. 48686).

NAGALAND: Naga Hills, May 1936, N. L. Bor 20836 (ASSAM); Naga Hills, 1935,

N. L. Bor 5330 (DD, K).

This species differs from *Indigofera heterantha* Wall. ex Brandis in the following characters :

In the protologue of *I. bracteata*, Baker (op. cit.) mentions 'leaflets 7-17', but all the specimens cited by him have only 5-7 leaflets and never more than 7. This is also true with

I. sesquipedalis C. B. Clarke ex Sanjappa, sp. nov.

I. heterantha Wall. ex Brandis

1. Shrub less than 1 m high.
2. Branches from the base, glabrescent.
3. Leaves petiolate.
4. Leaflets (5-) 7-11 (-17), thin, glabrescent above adpressed pubescent below.
5. Racemes peduncled.
6. Anthers sparsely bearded at base.
7. Pods 1.5-2 cm long, deflexed-spreading, adpressed short pubescent.

1. Shrub or tree more than 1 m high.
2. Branches above the base, adpressed white pubescent.
3. Leaves sessile or sub-sessile.
4. Leaflets (5-) 7-15 (-25), coriaceous, densely adpressed pubescent on both surfaces.
5. Racemes sessile.
6. Anthers glabrous at base.
7. Pods more than 2 cm long, spreading, adpressed long pubescent.

(ii) *Indigofera bracteata* Grah. (in Wall. Cat. no. 5477. 1831. *nom. nud.*) was validly described by Baker (1876) based on collections from Nepal (by Wallich), Khasia (by Hooker f. and Thomson) and Kashmir (by Thomson). On critical examination of the above specimens, it has been found that this species is a mixture of two taxa with distinct geographical distribution : Taxon 1 is restricted to Nepal and taxon 2 to Khasia Hills in Meghalaya (India). The differences between taxa 1 and 2 are described in the following table :

the specimens collected so far from Nepal as well as India. Even in the wrongly identified specimen [cited by Baker (op. cit.) as an exstipellate form from Kashmir—*Thomson s. n.*], the levels have only 13 leaflets. It is therefore, difficult to explain as to how such an error had crept into the description.

Baker (op. cit.) also states that he had not seen the mature pods and seeds of the species. Therefore, a detailed description of pods and seeds of the typical variety of the species is as follows :

Taxon 1	Taxon 2
1. Leaflets adpressed, pubescent on both surfaces.	1. Leaflets adaxially glabrous.
2. Pods less than 3 cm long with acute apex.	2. Pods more than 3 cm long with spine-pointed apex.
3. Sutures wingless or obscurely winged.	3. Sutures prominently winged.
4. Valves smooth.	4. Valves rugulose.

The specimens with characters of taxon 1 represent the typical variety i.e. *I. bracteata* Grah. ex Baker var. *bracteata* and those with characters of taxon 2 is described here as a new variety.

Indigofera bracteata Grah. ex Baker in Hook. f. Fl. Brit. Ind. 2:100. 1876. var. ***bracteata***.

Pods 2-2.8 × 0.2-0.25 cm, linear, straight, acute, glabrous, spreading, sutures narrow,

wingless to obscurely winged, valves smooth, sometimes faintly torulose, up to 9-seeded. Seeds 2×1 mm, cylindrical, truncate at both ends, smooth, deep brown (described from the specimen: Nepal, Kukni, Naikot and the valley of Likhu, 8 Dec. 1907, *I. H. Burkill* 29880 — CAL).

Distribution: NEPAL: Kukni, Patibayang, Sivapuri, Ranikarka (Bagdwar) — Endemic.

Indigofera bracteata Grah. ex Baker var. *khasiana* Sanjappa, var. nov. Syn. *I. bracteata* Grah. ex Baker in Hook. f. Fl. Brit. Ind. 2: 100. 1876. p.p.

I. bracteata var. *bracteata* affinis sed difert foliis adaxiliter glabris, leguminibus plus quam 3 cm longis, suturis latis alatis, valvis rugulosis, opicibusque aristatis.

Holotypus lectus a *Hooker f. & Thomson s. n.* ad locum Khasia Colles, 5000 — 6000 ped., et positus in herbario CAL. Isotypi positi in herbario CAL, MH.

Indigofera bracteata Grah. ex Baker var. *khasiana* Sanjappa, var. nov. (Fig. 2).

Syn. *I. bracteata* Grah. ex. Baker in Hook. f. Fl. Brit. Ind. 2:100. 1876 p. p.

Allied to *I. bracteata* var. *bracteata* but differs from it in having adaxially glabrous leaflets, legumes more than 3 cm long with broad winged sutures, rugulose valves and spine-pointed apices.

Type: Khasia Hills, 5-6000', *Hooker f. & Thomson s. n.* (holotype, CAL; isotype, CAL, MH).

Undershrub, branches slender, trailing, terete, (appear angular when dry), glabrous. Leaves 5-8 cm long, pinnate, alternate, petioles 1-2 cm long, canaliculate above, glabrous; leaflets (3-) 5-7, lateral opposite, 1.2-2.8 \times 0.6-1.0 cm oblanceolate, elliptic-oblong, rarely obovate, cuneate at base, obtuse to rounded or slightly emarginate at apex, mucronate,

pale green and glabrous above, glaucous and thinly adpressed pubescent below; stipules 3-5 \times 1-1.2 mm free-lateral, membranous, lanceolate, acuminate, striate, glabrous, stipels 2-2.5 mm long, prominent, free-lateral, setaceous, glabrous. Racemes 8-13 cm long, axillary, peduncles 3-5 cm long, striate, glabrous, rachis adpressed pubescent becoming glabrous. Flowers 10 mm long, violet-purple, white when dry: bracts 4-4.5 \times 2-2.5 mm, lanceolate, cuspidate, veined, ciliate along the margins, longer than buds, caducous; calyx 1-1.5 mm long, campanulate, 5-lobed, teeth short 0.5 mm long, deltoid, thinly adpressed pubescent without, ciliate along the margins; standard 10 \times 4-5 mm, elliptic, rounded at base, acute, mucronulate at apex, densely short adpressed pubescent without tube 0.5-1 mm long; 10 \times 2-3 mm, shortly clawed at base glabrous; keels 10 \times 4 mm, spathulate, spurred, thinly adpressed pubescent without; stamens diadelphous (9 + 1), anthers apiculate; ovary ca. 7 mm long, linear, 8-10-ovuled, glabrous; style ca. 3 mm long, slightly bent, glabrous; stigma capitate. Pods 3-3.5 \times 0.2-0.25 cm linear with spine-pointed apex, sutures broad, winged, valves rugulose, glabrous, reflected-spreading on rachis, 8-10-seeded, septate between seeds. Seeds (reddish-brown) 2 \times 1.5 mm, cylindrical, truncate at both ends, smooth, brown.

Flowering: July—December.

Fruiting: November — December.

Distribution: INDIA: Endemic to Khasia Hills in Meghalaya.

Etymology: This variety is named after the type locality Khasia Hills in Meghalaya State.

Specimens examined: INDIA: Meghalaya, Khasia Hills, 5-6000', *Hooker f. & Thomson s. n.* (CAL, MH); Rambari, 4000' 10 Nov. 1871, *C. B. Clarke* 1531OD (CAL); Laitlyngrat, 6000', 17 Dec. 1946, *F. Kingdon-ward*

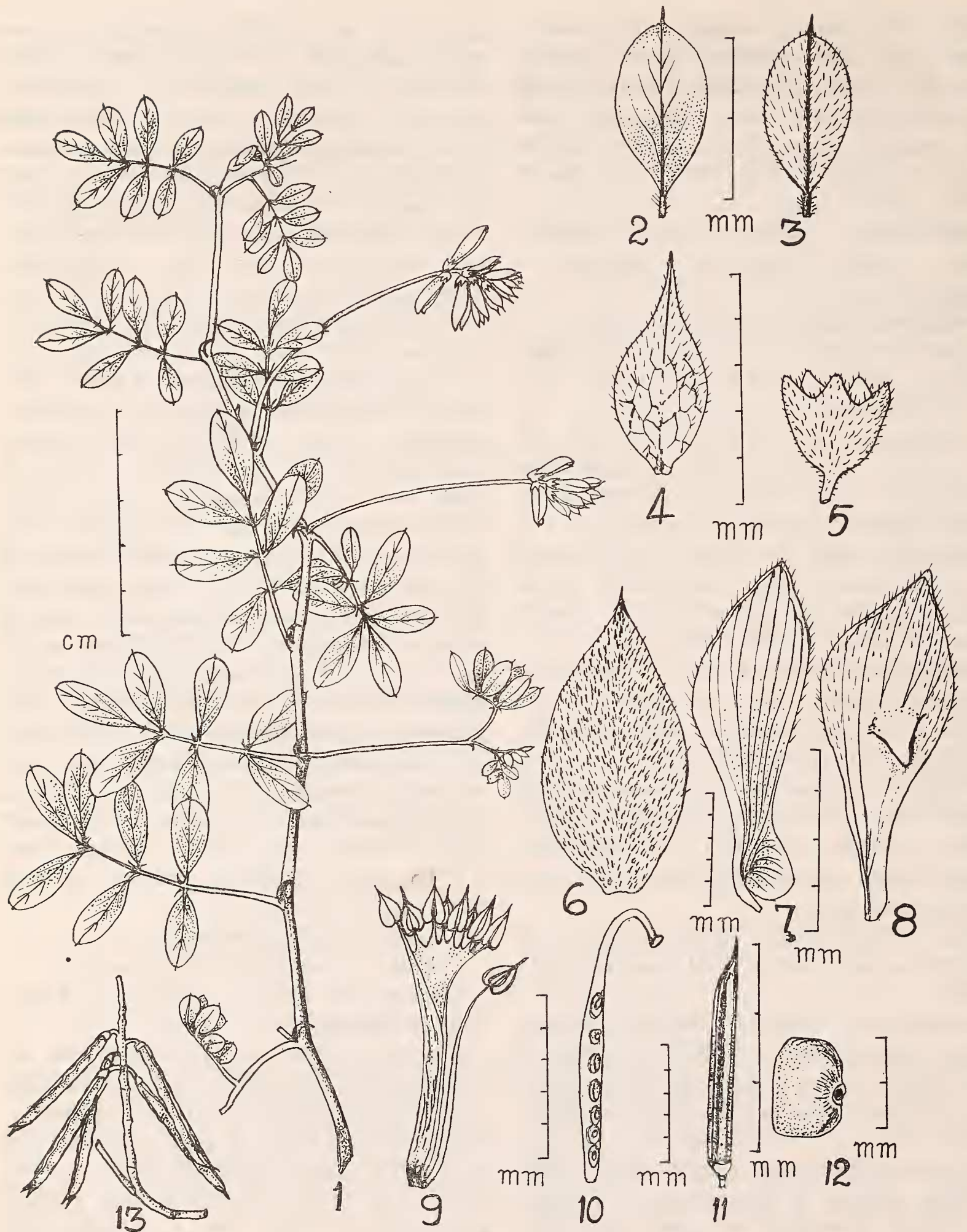


Fig. 2. *Indigofera bracteata* Grah. ex Baker var. *khasiana* Sanjappa. var. nov.
 1. A twig of the plant. 2. Leaflet-adaxial surface. 3. Leaflet-abaxial surface. 4. Bract.
 5. Calyx. 6. Standard. 7. Wing. 8. Keel. 9. Stamens. 10. Carpel. 11. Pod. 12. Seed.
 13. Dehiscent pods.

NEW DESCRIPTIONS

s. n. (CAL); Maflong, 4 Oct. 1931 *Shriram De* 16909 (ASSAM).
Sharma 9891 (ASSAM); Laitlyngrat, 17 Jul. 1946, *G. K. Deka* 21901 (ASSAM); Peak forest, 8 Sept. 1930, *P. C. Kanjilal* 8408 (ASSAM); Laitlyngrat, 17 miles from Shillong, 27 Aug. 1956, *G. Panigrahi* 3142 (ASSAM); Elephant fall, Shillong, 9 Oct. 1965, *H. Deka* 35591 (ASSAM); Shillong peak, 13 Oct. 1950, *G. K. Deka* 23052 (ASSAM); Laitlyngrat, 11 Aug. 1938, *R. N.*

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